

Applicant : Zhimin Liu
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Attorney's Docket No.: 13854-024001

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

1. (Currently Amended) An optical interleaver comprising:

C, a first collimating lens for collimating an input optical signal into collimated beams, the input optical signal including more than one wavelength, and a second collimating lens for focusing said collimated parallel beams into an output optical fiber; and

a phase delay generating means for generating substantially one phase-delay difference between portions of said collimated parallel beams, wherein the phase delay difference generating means is optically coupled between said first and said second collimating lens for generating ~~a substantially periodic~~ an interference pattern when said collimated parallel beams are focused by said second collimating lens, the interference pattern resulting in a suppression of one or more wavelengths.

2. (Previously presented) The optical interleaver of claim 1 wherein:

said phase delay difference generating means comprising a glass plate blocking a portion of said collimated parallel beams for generating a phase delay for a portion of said collimated parallel beams passing therethrough.

3. (Previously presented) The optical interleaver of claim 1 wherein:

said phase delay difference generating means comprising a glass plate having an upper portion covering an upper portion of said collimated parallel beams and said glass plate having a lower portion covering a lower portion of said collimated parallel beams for generating a phase delay difference between said upper portion and lower portion of said collimated parallel beams.

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4. (Previously presented) The optical interleaver of claim 1 further comprising:
a control means for controlling said phase delay difference generating means for selectively generating signal transmission at different wavelengths according to said interference generated in said second collimating lens.
5. (Previously presented) The optical interleaver of claim 4 further comprising:
said phase delay difference generating means comprising a glass plate having a plurality predefined segments with different combination of plate-thickness and diffraction index wherein said phase delay difference generating means is controlled by said control means for selectively generating signal transmission at different wavelengths with a predefined program.
6. (Previously presented) The optical interleaver of claim 1 wherein:
said phase delay difference generating means comprising a set of cascaded Mach-Zanter interferometer for generating a series of band-pass signal transmissions.
7. (Previously presented) The optical interleaver of claim 6 wherein:
each of said a set of cascaded Mach-Zanter interferometer comprising a phase delay plate and a half-pitch GRIN lens.
8. (Previously presented) The optical interleaver of claim 6 wherein:
each of said a set of cascaded Mach-Zanter interferometer comprising a phase delay plate and a pair of focus and collimating lenses.

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9. (Previously presented) The optical interleaver of claim 1 further comprising:
a reflective means for reflecting a portion of said collimated beams as second group of parallel beams transmitted along a second optical path away from said collimated parallel beams;
a third collimating lens for focusing said second group of parallel beams into a second output optical fiber; and
a second phase delay difference generating means for generating a second phase-delay difference between portions of said second group of parallel beams for generating an interference in said third collimating lens for selectively enhancing signal transmission of a second set of wavelengths outputting from said second optical fiber.
10. (Previously presented) The optical interleaver of claim 9 wherein:
said reflective means comprising a partially reflective front surface of said phase delay means and a mirror for reflecting a portion of said collimated beams as second group of parallel beams transmitted along a second optical path away from said collimated parallel beams.
- 11 (Canceled) An optical interleaver comprising:
a phase difference generating means for generating a phase difference between different portion of optical beams for selectively enhancing signal transmissions at certain wavelengths resulting from interference between said different portions of optical beams.
12. (Previously presented) The optical interleaver of claim 1 further comprising:
a control means for controlling said phase difference generating means controlling a selection of certain wavelengths for enhanced signal transmission.
13. (Previously presented) The optical interleaver of claim 1 wherein:
said phase difference generating means further comprising an optical element for transmitting optical beams therethrough.

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14. (Previously presented) The optical interleaver of claim 13 wherein:
said phase difference generating means further comprising said optical element for transmitting optical beams therethrough with at least two portions of different thicknesses.
15. (Previously presented) The optical interleaver of claim 13 wherein:
said phase difference generating means further comprising said optical element for transmitting optical beams therethrough with at least two portions of different diffraction indexes.
16. (Currently Amended) A method for configuring an optical interleaver comprising:
providing a first collimating lens for collimating an input optical signal into collimated beams, the input optical signal including more then one wavelength, and a second collimating lens for focusing said collimated parallel beams into an output optical fiber; and
positioning between the first and second collimating lens a phase difference generating means for generating a phase difference between different portions of optical beams, for generating an interference pattern resulting in a suppression of one or more wavelengths that is substantially periodic, for selecting a plurality of single wavelength signals in the optical beams, and where said collimated parallel beams are fused by said second collimating lens.
17. (Previously presented) The method of claim 16 further comprising:
employing a control means for controlling said phase difference generating means controlling a selection of certain wavelengths for enhanced signal transmission.
18. (Previously presented) The method of claim 16 wherein:
said step of employing said phase difference generating means further comprising a step of employing an optical element for transmitting optical beams therethrough.

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19. (Previously presented) The optical interleaver of claim 18 wherein:
said step of employing said optical element for transmitting said optical beams
therethrough is a step of employing said optical element with at least two portions of different
thicknesses for transmitting said beams through.

20. (Previously presented) The optical interleaver of claim 18 wherein:
said step of employing said optical element for transmitting said optical beams
therethrough is a step of employing said optical element with at least two portions of different
diffraction indexes for transmitting said beams through.

C1
C2
21 (Canceled) The optical interleaver of claim 19 wherein:
said step of employing said optical element for transmitting said optical beams
therethrough is a step of employing said optical element with at least two portions of different
diffraction indexes for transmitting said beams through.
